

PAVLYUCHENKO, M.M.; KIVSH, V.L.

Determination of flotation activity from the angle of dip
of air bubbles. Dokl. AN BSSR 8 no.6:390-393 Je '64.
(MIRA 17:10)

I. Institut chshchey i neorganicheskoy kafiniti AN BSSR.

KHIVSHCH, P.V., insh.

Development of new pulverization equipment at the Chernovtay Plant (brief
news. Energomashinostroenie 4 no. 9:46 8 '58. (KNA 11:11)
(Chernovtay--Milling machinery)

KAGAN, Ya.M.; KAMALOV, R.R.; ANTROPOV, A.D.; KNYSHENKO, O.N.

Density of the gas oil mixture in the annular space of wells
equipped with sinking centrifugal pumps. Nefteprom. delo
no.8:14-17 '64. (MIRA 17:12)

1. Tsekha nauchno-issledovatel'skikh i proizvodstvennykh rabot
neftepromyslovoj upravleniya "Aksakovneft".

MOSCOW, Russia, 1970, No. 1 ENCL 1, U.S.

Flying of plane equipped with plane for landing ground with
guidance. Reference, date no. 8127-00 166. (MPS 38:9)
With regard to the adoption of such a landing system
and the possibility of its practical use.

I 21656-66 EFT(n)/KPF(n)-2/KPF(t) LME(n) JN/JG
ACC NN: AR6011594

SOURCE CODE: UR/0137/65/000/012/V031/V031

AUTHOR: Knyshev, E. A.; Konev, A. F.; Rubinshteyn, Ye. A.

34

B

ORG: none

TITLE: Optimum conditions for melting ferronickelium from commercial niobium pentoxide

SOURCE: Ref. zh. Metallurgiya, Abs. 12V228

REF SOURCE: Sb. tr. Klyuchevsk. z-da ferrosplavov, vyp. 1, 1965, 69-73

TOPIC TAGS: niobium alloy, iron alloy, niobium compound, metal melting, slag, metal extraction

TRANSLATION: The authors studied the effects which the quantity of reducing agent in the charge as well as the slag and metal composition have on the technical and economic indices of aluminothermic Fe-Nb melting. It is found that maximum Nb extraction (85%) is reached when Al fed to the charge is 110% of the theoretically required amount. Lime was added to the charge in quantities up to 60% of the Nb₂O₅ to study the effect of slag composition. Maximum Nb extraction (89.2%) was reached with the addition of lime to the charge in quantities of 25-30% of the Nb₂O₅. A further increase in lime concentration lowers the specific heat of the process and reduces the extraction of Nb. Maximum extraction of Nb into the ingot (96%) was observed with the addition of Fe ore to the charge

UDC: 669.168.001

Card 1/2

ACC NR: AR6011594

in quantities of 20-30% of the Nb₂O₅. The resultant data are used for working out technical conditions for production of low-silicon Fe-Nb from commercial Nb₂O₅. D. Kachayeva. [VPRd]

SUB CODE: 11, 13 / SUBN DATE: none

Card 2/2 LFC

STASYUKOV, M.; CHUBAROV, P.; ZAYCHENKO, I., ratsionalizator; MITSINSKIY, V.; VOLOVIK, A.; KNYSHOV, I.; SHTEYNGART, M.

Why are the suggestions of Dnepropetrovsk metal workers so slowly realized? Isobr.i rats. no.11:24-25 N '58. (MIRA 11:12)

1. Dnepropetrovskiy metallurgicheskiy zavod im. Petrovskogo (for all except Shteyngart). 2. Starshiy inzh. Byuro isobretateley i ratsionalizatorov zavoda (for Stasyukov). 3. Zamestitel' predsedatelya zavodskogo komiteta (for Chubarov). 4. Zamestitel' sekretarya partiihnogo komiteta zavoda (for Mintsinskiy). 5. Zamestitel' sekretarya komiteta Leninskogo kommunisticheskogo soyusa molodeshi Ukrainskoy (for Volovik). 6. Sotrudnik gazety "Tribuna metalkurga" (for Knyshov). 7. Spetsial'nyy korrespondent zhurnala "Isobretatel' i ratsionalizator" (for Shteyngart). (Dnepropetrovsk--Efficiency, Industrial)

ACC NR: AR6035928

SOURCE CODE: UR/0413/66/000/020/0194/0194

AUTHOR: Arinushkin, L. S., Dumov, V. I./Knyshhev, V. A. / Moskovskiy,
V. D./ Polinovskiy, A. Yu./ Sharov, Yu. A.

ORG: none

TITLE: Pump unit for two-circuit fuel systems for power plants

SOURCE: Izobreteniya, promyshlennyye obraztsy, tovarnyye znaki, no.20,
1966, 194TOPIC TAGS: pump, fuel system, ~~two-circuit fuel system~~, fuel feed system,
engine fuel pumpABSTRACT: The proposed pump unit consists of a pump with a low pressure
circuit and a pump with a high pressure circuit. To improve its ef-
ficiency and to decrease the system's size and weight, the impellers
of both pumps are mounted on a common shaft and an annular collector is
positioned between the impellers; the collector is connected by ducts
to the low pressure pump outlet duct and to the high pressure pump
inlet cavity. In order to improve the anticavitation characteristics
of the unit, a variation of this unit is made so that the fuel by-pass
from the high pressure circuit runs through a duct which is positioned
tangentially to an annular chamber located at the unit inlet. (see
Fig.1).

Card 1/2

annular chamber; 10- unit
inlet

[WA-88]

Orig. art. has: 1 figure.

SUB APPROVED FOR RELEASE: 09/18/2001 CIA-RDP86-00513R000723410003-1"

Card 2/2

KHYSHEV, Ya.

For an early achievement of planned output. Mast.ugl.4 no.8:5
A '55.
(MIRA 8:10)

1. Brigadir navalootboyashchikov shakhty no.21 imeni Khrushcheva
tresta Sovetskugol' Stalinekoy oblasti
(Donets Basin--Coal mines and mining)

L 1704-66

EMT(n)/EMA(d)/EMP(t)/EMP(e)/EMP(b)/EMA(c)

LIP(a)

UD/RM

77

77B

ACCESSION NR: AP5020978

UR/0148/65/000/008/0073/0079

AUTHOR: Polukhin, P. I.; Arkhangel'skiy, A. V.; Knyshev, Yu. V.; Masterov,

V. A.

77.5

77.5

77.5

TITLE: Experimental study of the mechanics of rolling bimetal

77.5

SOURCE: IVUZ. Chernaya metallurgiya, no. 8, 1965, 73-79

TOPIC TAGS: bimetal, metal rolling, sheet metal, aluminum, copper, metal
cladding

ABSTRACT: This study in the rolling of bimetal was conducted to provide information for selection of proper thicknesses of the initial metal sheets to give the required relative thickness in the final bimetal. The effect of the initial ratio of sheet thicknesses and the effect of total thickness on the strain and force parameters of the rolling process were examined using bimetal of aluminum A000 and electrolytic copper of equal thickness to make up sandwiches 2, 3, 5, 10, 15 and 20 mm thick, and using sandwiches in which the aluminum: copper thickness varied from 0.13 to 6.70. Deformation irregularities are reduced as the total thickness is reduced to 5 mm. The anomalous increase in irregularities below

Card 1/3

L 1704-66

ACCESSION NR: AP5020978

this thickness was attributed to the greater deformation of aluminum in comparison to copper as sheet thickness is reduced. The pressure of the rolls is greater on copper than on aluminum of equivalent thickness, and specific pressures are minimum on sandwiches about 10 mm thick. As the thickness of the copper sheet in a 10 mm sandwich is decreased its deformation is reduced, and when the aluminum: copper ratio reaches 5.2-6.7 the sheets do not laminate. The distribution of torque between the rolls for bimetal over 5 mm thick was examined, but further study is required for thinner bimetals. The forward slip on aluminum is always greater than on copper when rolling bimetal, and as the initial thickness is increased from 2 to 13 mm the slip on copper is reduced to zero. Measurements of the contact arc between the metal sheets and the rolls showed that its length is determined by sandwich thickness, the amount of reduction per pass, and the ratio of the mechanical properties of the sheets and their thicknesses. Because of the complexity of the effects associated with the deformation of bimetal, further study of the specific pressure and/or friction force diagrams is required. Orig. art. has: 5 figures

Card 2/3

L 1704-66
ACCESSION NR: AP5020078

3

ASSOCIATION: Moskovskiy institut stali i splavov (Moscow Institute for Steels
and Alloys)

44,55

SUBMITTED: 29Apr65

ENCL: 00

SUB CODE: MM

NR REF SOV: 002

OTHER: 000

mlb

Card 3/3

L 20778-66 EWT(d)/EWT(m)/EWP(w)/EWP(v)/I/EWP(t)/EWP(k)/EWP(h)/EWP(l) IJP(o)
ACC NR: AP6003338 JD/HW/JH SOURCE CODE: UK/0148/65/000/010/0080/0083

47.
B

AUTHOR: Polukhin, P. I.; Arkhangelskiy, A. V.; Knyshov, Yu. V.; Matarov, V. A.

ORG: Moscow Institute of Steel and Alloys (Moskovskiy institut stali i splavov)

TITLE: Certain features of the rolling of bimetal strip 10

SOURCE: IVUZ. Chernaya metallurgiya, no. 10, 1965, 80-83

TOPIC TAGS: bimetal, metal rolling, aluminum, copper, yield strength, plastic deformation

ABSTRACT: Reduction in area during rolling was investigated for a 40 mm wide Al-Cu strip as a function of the initial mechanical properties of each metal (as modified by preliminary peening or annealing) and the rate of their strain hardening during rolling. Owing to preliminary peening the initial ratio between the yield points of Cu and Al, $U_{0.2Cu}/U_{0.2Al}$, was 0.8 (peened Al, Al, annealed Cu) and 17 (peened Cu, annealed Al). The distribution of total reduction in area between the layers of the strip, the total and mean unit pressure, the linear pressure per unit width of the strip, the distribution of pressure over the arc of contact with the roll and the length of that arc, and the torque on the rolls were investigated in a rolling mill with

Card 1/2

DDC: 621.771.21.01

21 21

L 20778-66

ACC NR: AP6003530

rolls of 170-mm diameter. It was found that, when rolling a strip with layers of a thickness ratio of 1:1, the mean unit pressure is sufficiently closely equal to the mean yield point of the strip; thus, the averaged yield point for both layers of the strip may be used for the approximate calculation of rolling stresses. Equality of torques on both rolls was observed for the case of a 45% reduction in area, when the mean radial pressures on Al and Cu differed, and when the corresponding linear pressures on the rolls also differed; this proves yet again the need to take into account the asymmetry of deformation of the strip. The length of the arc of contact with the roll also differed, being greater for the layer with the greater deformation resistance (Al). Orig. ext. has: 5 figures.

SUB CODE: 11, 13/ SUMM DATE: 20Jul65/ ORIG REV: 000/ OTH REV: 000

Card 2/2

"APPROVED FOR RELEASE: 09/18/2001

CIA-RDP86-00513R000723410003-1

PERVOMAYSKIY, G.S.; SIVSTROV, A.K.; KORYSHEVICH, N.A.

Field tests of new repellents against mosquitoes in a hot climate.
Trudy Astr. zap. no. 9:192-196 '64.

(MIRA 18:10)

APPROVED FOR RELEASE: 09/18/2001

CIA-RDP86-00513R000723410003-1"

KNYSHOV, F.

Methodological work with teachers and instructors. Prof.-tekhn. obr.
22 no. 3:26-28 Mr '65. (MIRA 18:7)

1. Direktor uchebno-kursovogo kombinata tresta "Urupmedstroy"
Oglavnogo upravleniya po stroitel'stvu v rayonakh Severnogo
Kavkaza Ministerstva gorodskogo i sel'skogo stroitel'stva RSFSR.

14(5)

PHASE I BOOK EXPLOITATION

SOV/2400

Shumakov, V.A., N.P. Knyupfer, N.I. Nikolsyev, S.N. Tarakanov, and Ye.A. Sal'ye

Barvedochnoye bareniye (Exploratory Drilling) Moscow, Gosgiztekhizdat, 1958. 405 p. Errata slip inserted. 20,000 copies printed.

Ed. (Title page): V.A. Shumakov; Ed. (Inside book): V.A. Boravlev; Ed. of Publishing House: N.B. Nekrasova; Tech. Ed.: O.A. Onrova.

PURPOSE: This textbook is intended for petroleum geology and engineering students in schools of higher learning and for engineering personnel engaged in exploratory drilling.

COVERAGE: The book covers the main theoretical and practical aspects of exploratory drilling. Equipment and methods are described and their effectiveness evaluated. Data on oil drilling tools and auxiliary equipment include specifications and diagrams. N.P. Knyupfer prepared the chapter on measurement in directional drilling including the deflection of boreholes. N.I. Nikolsyev contributed the data on rotary and turbo-drilling,

Cont-1/2

5383.

F KNYUPPER, N. O.

THERMOMETER (K - 47) FOR MEASURING TEMPERATURE OF ROCK IN MINE WORKINGS.
 Kniupfer, N. P. and Krackowski, S. A. (Ugol (Coal), No. 1949, 29-30).
 The authors, with the assistance of the Giprokhel-Institut at Leningrad, have constructed an electric thermometer especially adapted to the measurement of rock temperature. The device consists of a copper thermometer and Wheatstone bridge. The thermometer is mounted in a protecting paper sheath treated with bakelite and fitted with a brass cap. The diameter of the sheath and of the cap is 30 m.m.; the cap has the form of a truncated cone (60° angle), 5 m.m. in diameter at the top, and the thickness of the walls of the cap is about 1 m.m., and that of the blunt extremity 3 m.m. A layer of paper provides electric insulation between cone and winding. The winding consists of an enamelled copper wire 0.05 m.m. in diameter wound in a single layer round a paper cone, the size of which is equal to the inner cone of the cap. By means of an inner thread the cap is screwed to the bakelite pipe. On the other end of the pipe is a brass muff; into the latter is screwed an aluminium pipe, to which three other similar pipes may be added consecutively, giving a total length of 3 m. The thermometer is introduced into a hole of 2.5 m. length. Round the paper cone are

800-118 METALLURICAL INSTITUTE CLASSIFICATION

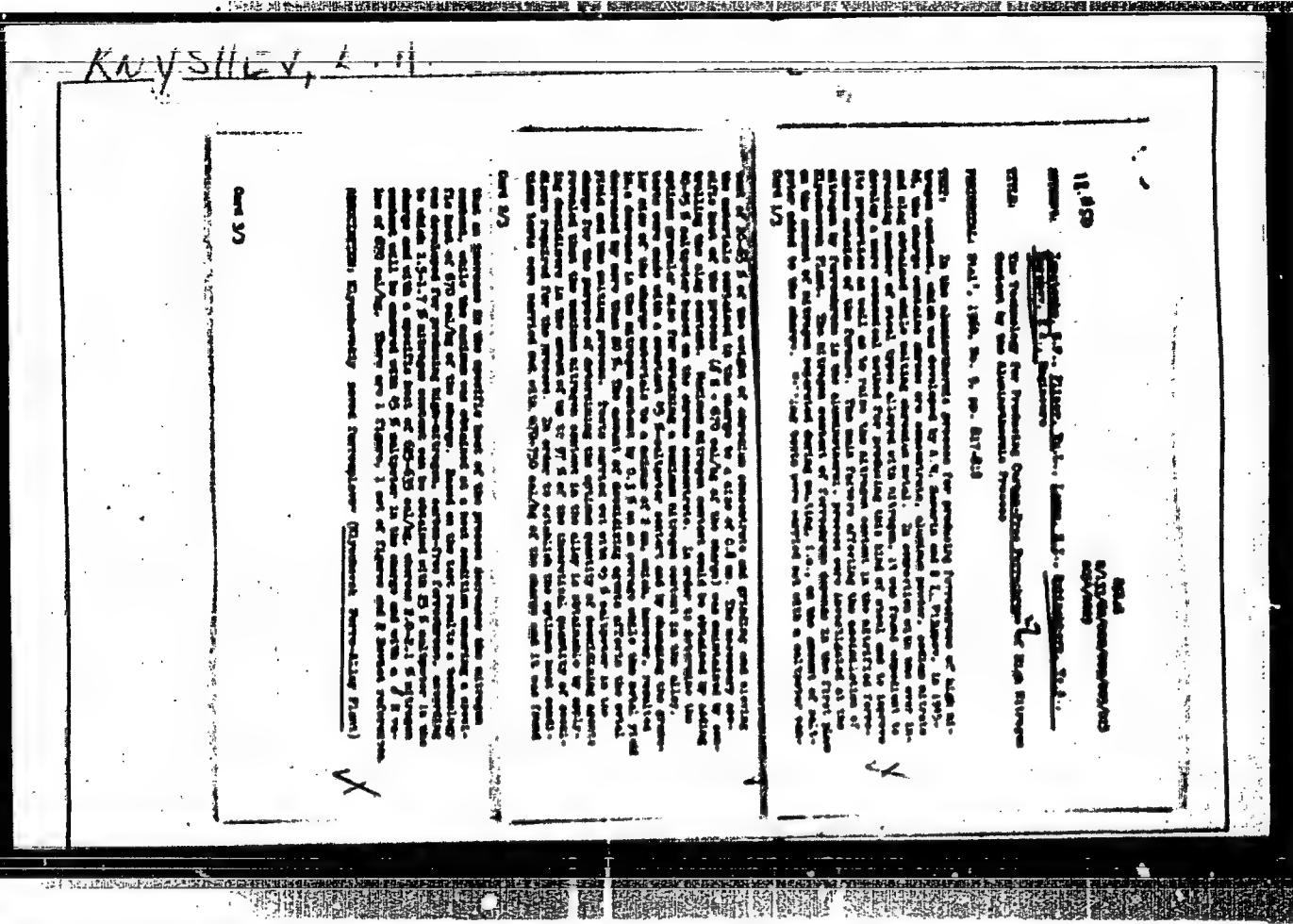
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| W | W | W | W | W | W | W | W | W | W | W | W | W | W | W | W | W | W | W | W |
| W | W | W | W | W | W | W | W | W | W | W | W | W | W | W | W | W | W | W | W |

wound more than 1 m. of copper wire, of resistance 118 ohms at 16°C. The active arm is connected with the bridge by means of a twin-core cable of 4 m. length; the section of each core is 0.75 mm². The whole equipment is carried in a wooden case. The instrument is a three-range one; the precision of reading is ± 0.20. Current is supplied by two dry cells, which do not need replacement more often than 2 - 3 times per year. Tests showed the instrument to be suitable for measurement of temperatures between -4.0°C. and +85.5°C. (L)

N.C.B.

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CIA-RDP86-00513R000723410003-1



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CIA-RDP86-00513R000723410003-1"

IGNATENKO, G.P., inzh.; PLINER, Yu.L., inzh.; LAPPO, S.I., inzh.; RUBINSHTEIN,
Ye.A., inzh.; KHYSHEV, E.A., inzh.

Technology of making high-nitrogen, carbon-free, ferrochromium by
the aluminothermic method. Stal' 20 no.9:817-818 S '60.

(MIRA 13:9)

1. Klyuchevskiy zavod ferrosplavov.
(Iron-chromium alloys—Metallurgy) (Aluminothermy)

KNYSHOV, Ivan Nikitich; PRON', Vladimir Matveyevich; YURCHUK, V.I.,
kand. ist. nauk, otd. red.; VALIGURA, V.A., red.; MATVIICHUK,
A.A., tekhn. red.

[Our confident steps] Tverdoi postup'iu. Kiev, 1961. 45 p.
(Obshchestvo po rasprostraneniiu politicheskikh i nauchnykh
znanii Ukrainskoj SSR. Ser.1, no.20) (MIRA 15:2)
(Dnepropetrovsk—Steel industry) (Efficiency, Industrial)

POLUKHIN, P.I.; GUM, O.Ya.; MASTEROV, V.A.; KNYSHEV, Yu.V.

Calculating forces and deformations in the reduction of laminated
solids. Izv.vys.ucheb.zav., chern.met. 5 no.6:71-75 '62.

(MIMA 15:7)

1. Moskovskiy institut stali.
(laminated metals) (Forging)

S/148/62/000/006/002/005
E081/E435

AUTHORS: Polukhin, P.I., Gun, G.Ya., Masterov, V.A.,
Knyshov, Yu.V.

TITLE: Calculation of the stresses and strains during the
pressing of layered bodies

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy. Chernaya
metallurgiya, no.6, 1962, 71-75

TEXT: The problem considered is the pressing out between dies of
a material consisting of n layers of different substances (Fig.1)
taking into account hardening, friction between the layers,
and shear forces in the external zone. The work corresponding to
the two latter effects is evaluated and, using the method of
undetermined multipliers, formulae are derived which enable the
specific pressure and the state of strain in the material to be
calculated. A nomographic method of accomplishing the
calculations is outlined. There are 2 figures.

ASSOCIATION: Moskovskiy institut stali (Moscow Steel Institute)

SUBMITTED: January 10, 1962

Card 1/3 ✓

KYSHOV, Ivan Nikitich; PRUN', Vladimir Matveyevich; NESTENKO,
F.F., red.

[Sprouts of the new, the communist way] Parostky novoho,
komunistychnoho. Dnipropetrov's'k, Dnipropetrov's'ke kryzab-
kove vyd-vo, 1961. 58 p.
(MIRA 17:10)

KNTSHOV, N.

Power workers master the trade. Prof.-tekhn. obr. 12 no.12:8-9
D '55. (NLRB 9:3)
(Electric engineering--Study and teaching)

KNIZHEVSKAYA, A. G.

"The use of radium and radioactive cobalt to treat cancerous formations on the eyelids." Xin Health Ukrainian SSR. Khar'kov Medical Inst. Khar'kov, 1956. (Dissertations for the Degree of Candidate in Medical Science)

So: Knizhays letopis', No. 16, 1956

KLEJMAN, Herman, mgr ins.; KMISZ, Jozef, mgr ins.

9th International Electronics Congress in Rome, June 18-23, 1963.
Przegl telekom 35 [1.e. 36] no.3:93-100 Mr '63.

1. Komitet do Spraw Techniki, Warszawa.

SOV/96-59-10-20/22

AUTHORS: Ko, A.P. (Dr.Tech.Sci.) and Kagan, Ya.A. (Cand.Tech.Sci.)

TITLE: Book Review - 'Standards for the Design and Calculation
of Fuel-pulverising Installations'. Gosenergoizdat 1958.
159 pp.

PERIODICAL: Teploenergetika, 1959, Nr 10, pp 93-94 (USSR)

ABSTRACT: The material contained in this book is much needed by
designers but it has not been very carefully drawn up
and edited. More information is required about the
design of large shaft mills.
There are 1 table and 6 Soviet references.

Card 1/1

FUDOR, Gyorgyne, dr. KO, Klara

Device for processing signals from industrial measuring instruments using counting technique. Meres automat 12 no. 4/5:134-139 '64.

1. Central Research Laboratory of Measuring Techniques.

H6 ✓ 14159 - Centrifugal Casting of Steel. Antonovskiy, Anatolij
Fyodorovich (Bogdanov (Vinnitsa).) Herbert Hartmann and
Tomas K. Ovadie, v. 6, no. 10, Oct. 1955, p. 125-126.
Comparative quality of centrifugal and stationary castings. Discus-
sion, photographs, tables, micrographs.

of ①

KOLOV, I.G. (Physician; Cand Med Sci)

Dissertation: "Experiments for Using Skin from a Corpse in Otorhinolaryngology."

Second Moscow State Medical Institute imeni I.V. Stalin

23 May 49

SO Vecheryaya Moskva
Sum 71

KOAYROVA, S.A., PHYSICIAN

CAND MED SCI

Dissertation: "Cardiotoxicity of the Human Serum in a Case of True Rheumatism."

23 May 49

Second Moscow State Medical Inst unain

I.V. Stalin

SO Vecheryaya Mcskva
Sum 71

AZZENSHTEYN, M.D.; DEMIDOVICH, Ye.A.; KOBA, A.G.

Fluting inclined sections of roll grooves by disk knurling.
Metallurg 9 no.5:34-35 My '64. (MIRA 17:8)

1. Yenakiyevskiy metallurgicheskiy zavod.

KOBA, G. [Koba, H.]

Mechanized production of three-step ceramic blocks. Sil'. bud.
10 no. 9:17-18 s '60.
(MIRA 13:6)

1. Predsedatel' Tavoriyskoy meshkolkhoznoy stroitel'noy organizatsii L'vevskoy oblasti.
(Building blocks)

USLONTSEV, B. i KOBa, G. [Koba, H.]

Arched livestock buildings are being built by production-line methods.
Sil', bud. 10 no. 11; 7-10. II '60.
(MIRA 13:11)

1. Rukovoditel' gruppy sektora tekhnologii i organizatsii stroitel'stva
Akademii stroitel'stva i arkhitektury USSR (for Uslontsev). 2. Ruko-
voditel' soveta Davorovskoy meshkolkhoznoy stroitel'noy organizatsii
L'vovskoy oblasti (for Koba).

(Lvov Province--Farm buildings)
(Collective farms--Interfarm cooperation)

KOBA, G. [Koba, H.]

Use of three-stepped blocks in rural construction. Bud. mat. i konstr.
4 no.1:35-37 Ja-F '62. (MIRA 15:7)

1. Golova Zavoriv'skogo nizhnikol'skogo
(Collective farms—Interfarm cooperation) (Ceramics)

Kobza, G. A.

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136

CONFERENCE OF LEADERSHIP SPECIALISTS (CONFÉRENCE DES SPÉCIALISTES DE LA DIR

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三

Ergonomics in Design 199

10

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15(2)

AUTHORS: Yanpol'skaya, A. A., Koba, G. A.

SOV/131-59-3-5/18

TITLE:

Automatic Control of the Dosing of the Mass on the Press SM-143
(Avtomaticheskoye regulirovaniye zasyipki massy na prese SM-143)

PERIODICAL:

Ogneupory, 1959, Nr 3, pp 115-120 (USSR)

ABSTRACT:

On the press SM-143 the pressing effect is transformed by the press rods and the tensions forming in them are characteristic of this force. For measuring the tensions in the rods extensometers are used which are fastened to the opposed rod surfaces as can be seen from figure 1. The extensometers are connected by a non-equilibrium bridge which is fed by direct-current of constant voltage. The unbalance-voltage of the measuring bridge in its operation on an electron amplifier with a high input impedance can be computed from the formula $U = 1.25 \frac{I}{2} \Delta R$, where ΔR denotes the variation of the bridge resistance, I the current strength of the bridge supply and 1.25 a constant. Figure 2 shows the simplified scheme of the automation-dosing of the mass and detailed descriptions are given next. Figure 3 gives the press curves. The scheme of the measuring bridge is shown on figure 4 and the basic scheme of the relay connecting block on figure 5. An experimental device was tried on a press SM-143

Card 1/2

Automatic Control of the Dosing of the Mass on the Press SM-143 SOV/131-59-3-5/18

of the Borovichskiy kombinat (Borovichi Kombinat). The tensions in the press rods, the current strength of the press electromotor and of the signals of the output relay were oscillographically recorded (Figs 6,7, and 8). At the same time the pressed products were examined as to weight and strength. Figure 9 shows the measuring and weighing results of the unworked press material with hand and automatic control of the mass dosing. By the automatic control of the mass dosing the uniformity of the products is increased and the work of the pressmen rendered more easy.- There are 9 figures and 6 references, 5 of which are Soviet.

ASSOCIATION: Vsesoyuznyy institut ogneuporov (All-Union Institute for Refractories)

Card 2/2

KOBA, G.A., insh.

Device for a continuous removal of dust from a cyclone
cone. Masl.-shir.prom. 28 no.7:41-42 Jl '62. (MIRA 15:11)

1. Krasnodarskiy maslozhirovoy kombinat imeni
V.V. Kuybysheva.

(Separators (Machines))
(Sunflower seed)

YAM, V.M., inzh.; KOBA, G.A., GOLOSKOV, E.I.

Investigating stresses in frames of hydraulic press housings. Trudy
Inst. ogneup. no.35:137-158 '63. (MIRA 17:12)

1. Vsesoyuznyy institut ogneuporov (for Koba). 2. Leningradskiy zavod
"Metallist" (for Goloskov).

L 14008-66 FSS-2/EWT(1)/ENT(n)/EMP(1)/L/FCS(k) MM/JW/JMD/GG/ME/RM
ACC NR: AF6004437 SOURCE CODE: UR/0414/65/000/003/0093/0098

AUTHOR: Dremin, A. N. (Moscow); Roginov, I. K. (Moscow); Koba, I. G. (Moscow)

ORG: none

TITLE: Study of the reaction time in the detonation of liquid explosives by the electromagnetic method 31, V4, 75

SOURCE: Fizika goraniya i vzyvov, no. 3, 1965, 93-98

TOPIC TAGS: liquid explosive, detonation time

ABSTRACT: The reaction time t in the detonation of liquid explosives was studied by obtaining mass velocity profiles for charges of nitromethane and of a nitromethane-acetone mixture (75:25) using the previously described electromagnetic method (A. N. Dremin, K. K. Shvedov. PMTF, 1964, 2). To determine the effect of the size of the recording wire, which is located within the explosive charge in the electromagnetic method, the interaction of a detonation wave with a plate of aluminum foil (0.035 mm thick) and with a mica plate (0.04 mm thick) in nitromethane and nitromethane-acetone mixtures was studied using high-speed photography. It is shown that there is a detonation delay of about 0.13 usec behind both the aluminum and the mica plates. The mass velocity profiles recorded by the electromagnetic method with wires 0.035 and 0.22 mm thick for nitromethane and nitromethane-acetone mixtures also showed a detonation delay of about 0.17 usec in the case of the 0.035 mm wire, which is in good

Card 1/2

I 14008-66
ACC NR: AP6004437

agreement with the value obtained by the photographic measurements. With the 0.22 mm recording wire, the detonation delay was 0.43 usec. This difference is probably due to the difference in the intensities of the shock waves leaving the wires. The mass velocity in the shock wave behind the thin wire is greater than behind the thick wire. Thus, the recording wire creates a discontinuity dividing the combustion products and the unperturbed explosive. The mass velocity in the unperturbed explosive behind the shock wave may be calculated from the mass velocity of the combustion products and the shock adiabat of the explosive. The calculated value of the mass velocity behind the shock wave ($u_1 = 1.86$ km/sec) is close to the value obtained from the electromagnetically recorded mass velocity profile ($u_1 = 1.82$ km/sec). Extrapolated to the initial mass velocity recording point, $u_1 = 2.04$ km/sec. The mass velocity sharply decreased from the initial maximum point to a certain break point after which the decrease became steady. The mass velocity at the break point was $u_2 = 1.51$ km/sec. The time from the initial recording point to the sharp break point is the total reaction time τ , and estimated to be equal to about 0.4 sec for the nitromethane-acetone mixture. The width of the reaction zone may be calculated when τ is known: $a = \tau(D - \bar{u})$, where D is the detonation velocity and \bar{u} is the average mass velocity. For the nitromethane-acetone mixture (75:25), $D = 5.75$ km/sec and $\bar{u} = 1.77$ km/sec; thus $a = 1.6$ mm. Orig. art. has: 4 figures and 1 formula. [PS]

SUB CODE: 19/ SUBM DATE: 02Feb65/ ORIG REF: 014/ OTH REF: 005/ ATD PRESS:

4196

Card 2/2 SLC

KOBA, I.I., SHEVCHENKO, B.D., YARTSEV, P.A.

"High frequency system experiment placing "VP" in energy of 100 Mev."

Report submitted to the Intl. Conference on High Energy Physics and Nuclear
Structure, Geneva, Switzerland. 25 Feb-2 Mar 1963

L47312-03 EPA(v)-2/EWT(1)/EDC(t)/ED1(s)-2 PI-4/Po-6 IJP(c) 17/08
ACCESSION NR: A78007922 8/0000/60/000/000/0293/0299

AUTHOR: Val'ter, A. K.; Grigor'yev, Yu. N.; Dukkina, I. N.; Ivanov, V. F.;
Il'in, A. O.; Kode, I. I.; Kondratenko, V. V.; Kocheshnikov, N. I.; Tarasenko, A.
S.; Terekhov, B. A.; Tolokon, A. K.; Shenderovich, A. M.; Grishagin, I. A.

TITLE: The apparatus of the Physicotechnical Institute, Academy of Sciences,
Ukrainian SSR, for colliding electron beams with energies of 200 x 100 Mev for ex-
periments on the scattering of electrons on electron

SOURCE: International Conference on High Energy Accelerators. Dubna, 1963.
Trudy. Moscow, Atomizdat, 1964, 293-299

TOPIC TAGS: high energy accelerator, high energy plasma, particle beam, particle
physics, charged particle beam

ABSTRACT: Work on colliding electron beams in the Physicotechnical Institute,
Academy of Sciences, Ukrainian SSR, was begun in 1960. The existence of linear
electron accelerators was basic for the initiation of such work. At the first
stage, it was decided to stop at electron storage devices of 100 Mev energy, since
it was found that even at such comparatively small energies of the colliding beams

Card 1/8

L 47312-65

ACCESSION NR: AT5007922

many problems can be solved. The most convenient storage design is a system of race-tracks with a common linear section in which the collision of the two beams is effected. A distinctive property of the Institute's storage device is the great lengths of the linear sections, equal to 90 and 80 cm for a radius of revolution of 50 cm. The great length of one pair of linear sections in each of the rings was selected in order to provide for measurement of the minimum angle of scattering. Selection of a small radius of revolution was due to the requirement of minimum equilibrium dimensions of the beam and to the tendency to have a not too long time for damping of the beam oscillations. To localize the region of interaction, the beam orbits are distorted in the vertical plane by means of two "intersecting" magnets that create a homogeneous field in the radial direction. The magnets are arranged in the common linear section. The length of each of the "intersecting" magnets equals 10 cm, and the magnetic field strength is up to 640 oersted. The magnets deflect the equilibrium orbit by 1 cm from the median plane. The quadrants have a constant magnetic field index of $n = 0.428$. The coupled magnets in the section that is common for both orbits have zero gradient; the index in the remaining sections is $n_1 = 0.480$. The stability of the Institute's system is characterized by a diagram showing field index n in the quadrants versus the field index n_1 in the coupled magnets. The regions of stability and resonance lines of various

Card 2/8

L 47312-65

ACCESSION NR: AT3007922

orders are indicated in the diagram and discussed. The selected operating point is at a maximum distance from the resonances; in this case the frequencies of betatron radial and vertical (axial) oscillations are respectively equal to $v_r = 1.145$, $v_z = 0.6936$. The internal dimensions of the vacuum chamber were $100 \times 40 \text{ mm}$. The determining problem here was the conditions governing the beam input into the storage device. The beam is fed to an inflector through a magnetic channel. The initial conditions are so chosen that the beam can bypass in the first six revolutions the inflector set a distance of 2.25 cm from the equilibrium orbit. The behavior of the storage device in the first six revolutions is described. In case the trailing edge of the magnetic field pulse lasts for three revolutions of the particles in the storage device, the introduction of particles into the chamber can also be prolonged in the course of three revolutions. In order to capture particles in the storage device it is necessary to create with the help of inflector magnets a magnetic field strength of $B_1 = 1900$ oerstedes, $B_{II} = 2430$ oerstedes. The system of tolerances is evaluated on the assumption of the following parameters for the input beam: width $a = 0.8 \text{ cm}$, height $b = 0.3 \text{ cm}$, angular divergences: radial $\delta\gamma_r = 2 \cdot 10^{-3}$ and vertical $\delta\gamma_z = 3 \cdot 10^{-4}$. Preliminary measurements indicate that this data can be realized in the case of the Institute's apparatus. The requirements on

Card 8/8

L 47312-65

ACCESSION NR: AT5007922

the stability of the magnetic field of the inflector are: $M_1/H_1 = 10\%$, $M_{11}/H_{11} = 3\%$. Taking into consideration the indicated quantities, the maximum values of the curvature of the radial betatron oscillations will be equal respectively to $P_r = 2.8$ cm, $P_{11} = 4.1$ cm. According to computations, the equilibrium dimensions of the beam must be $a_r = 0.04$ cm; $a_{11} = 0.2$ cm. Due to the quantum fluctuations in synchrotron radiation, the longitudinal dimension of the particle bunch equals 40 cm for a gap voltage of about 1.5 kilovolts. The mean energy expended on an electron per revolution, taking into account the coherent radiation, is equal to 220 electron-volts. The time of oscillation damping amounts to 100 msec. Alternate injection of the beam of electrons in the ring is effected by three sector magnets with double focusing. The introduction of a beam turned away from the accelerator and with zero initial conditions is ensured by the application of a cylindrical magnetic shield with a shielding coefficient varied along the length. All the magnets are supplied with power from sources that have a current stability of at least 0.02%. The report also discusses the vacuum chamber, voltage generator and a few other aspects of the apparatus. Orig. art. has: 3 figures, 2 tables.

Card 4/8

L 47312-65
ACCESSION NR: AT9007922

ASSOCIATION: Fiziko-tehnicheskiy institut AN UkrSSR (Physico-technical Institute,
AN UkrSSR)

SUBMITTED: 26 May 64

ENCL: 00

SUB CODE: KB, KP

NO REF NOV: 000

OTHER: 000

Card 5/8714

*SKEMANCHUK, Dmitriy Iosifovich; KOBAS, M., redaktor; LEVCHENKO, O., tekhnichnyi
redaktor*

[Production capacities of industrial enterprises and methods for
their efficient use] Vyrobnychi potushnosti promyslovykh pidpryiemstv
i shliakhy ikh rational'nogo vyuystannia. Kyiv, Derzh.vyd-vo
polit.lit-ry URSR, 1957. 46 p. (MLRA 10:10)
(Russia--Industries)

CHUNTULOV, Vladimir Timofeyevich; KOBRA, M., red.; LAPCHENKO, K., tekhn. red.

[Ukrainian economy in full development] Rozkvit ekonomiky Ukrains'-
koi RSR. Kyiv, Dnestr, vyd-vo polit. lit-ry URSS, 1959. 64 p.
(MIMA 11/6)

(Ukraine--Economic conditions)

STUDENNIKOV, Timofey Vasil'yevich [Studennykov, T.V.]; KOBIA, N., red.;
KOPITKOVA, N., tekhn. red.

[Transportation and communications in the Ukraine during the
seven-year plan] Transport i sv'ianok Ukrayiny v Semyrichtsi.
Kyiv, Dersh, vyd-vo polit. lit-ry URSR, 1960. 102 p.
(MIRA 14:5)

(Ukraine--Communication and traffic)

OCHTROWITJANOV, K.V.; GATOVSKIY, L.M. [Hatova'kyi, L.M.]; DUX'MINOV, I.I.;
DUBOVENKO, Ye. [Dubovenko, I.E.], red.; KOBIA, M., red.; KOPTIKOVA,
M., tekhn.red.

[Political economy; textbook] Politychna ekonomika; pidruchnyk.
Peraklad z 3 perer. i dep. rosiis'koho vyd. 1959 roku. Kyiv,
Derzh.vyd-vo polit.lit-ry URSS, 1960. 686 p. (MIRA 13:?)

1. Akademiya nauk USSR, Kyiv, Institut ekonomiki.
(Economics)

KARAKOZ, Ivan Ivanovich; KOBA, M., red.; MIL'KIN, Yu., tekhn. red.

[How to use the production funds of an enterprise to a better advantage] Shliakhy krashebobo vyuystannia vyrabuychikh fondiv pidpryienstva. Kyiv, Dernh. vyd-vo polit. lit-ry UkrSSR, 1961. 35 p.
(MIRA 14:10)
(Industrial management)

RYZHKOV, Ivan Ivanovich, kand. ekonom. nauk, starshiy nauchnyy sotr.;
KOBA, M., red.; GAVRILET'S, D. [Havrylets', D.], tekhn. red.

[Production funds of industrial enterprises] Vyrobnychi fondy pro-
myslovykh pidpryiemstv. Kyiv, Dersh. vyd-vo polit. lit-ry, URSS,
1961. 37 p.
(MIRA 14:11)

1. Institut ekonomiki AN USSR (for Ryzhkov).
(Capital)

BONDARENKO, V.V., doktor ekon. nauk, otd. red.; KOBIA, M.F., red.;
LYSOVETS', O.M. [Lysovets', O.M.], tekhn. red.

[Problems of labor productivity statistics in industry and
agriculture] Pytannia statystyky produktyvnosti pratsi v pro-
myslovosti i sil's'kому hospodarstvi. Vyd-vo AN URSR, 1962.
302 p.
(MIRA 16;2)

1. Akademiya nauk URSR, Kiev. Instytut ekonomiky. 2. Zavedu-
yushchiy otdelom statistiki Instituta ekonomiki Akademii nauk
Ukr.SSR (for Bondarenko).

(Productivity accounting)

KOBA, M.P., red.; SERGEEV, V.P. [Sergeev, V.P.], tekhn. red.

[The call of beacon lights] Maisky klyuchit'; sbirnyk statei.
Kyiv, Dersh. vyd-vo polit. lit-ry Ukr., 1961. 120 p.

(MIRA 14:9)

(Agriculture—labor productivity)

KOBIA, N.I. (Kiev)

Connection between industrial training and the study of science in
the secondary schools. Politekhn. obuch. no.3:20-22 Mr '59.
(MIRA 12:4)
(Science--Study and teaching)

KOBA, P.D., podpolkovnik meditsinskoy sluzhby

Sensitivity of the skin to ultraviolet rays in chronic gastritis
and peptic ulcer. Voen.med.shur. no.3:86 '59. (MIRA 12:6)
(ULTRAVIOLET RAYS--PHYSIOLOGICAL IMPACT) (STOMACH--DISEASES)
(SKIN)

D'JANOWICZ, Jan; KOBA, Stanislaw

Achievements of the Health Service in the Region of Kielce
during 30 years of the Polish People's Republic. Med. Inst.
18 no.21 (Suppl.) 1-3 19 N '65.

KOBA, Stanislaw; WESOLOWSKI, Zenon

A case of agranulocytosis after pyramidone. Wiad. lek. 18
no. 21:57-59 15 N 1965.

1. Z Oddzialu Zakaznego Szpitala Wojskowego w Kielcach
(Ordynator: dr. med. S. Koba).

KOBA, Stanislaw

History of health service in the county in Kielce region
in XIX century. Wiad. lak. 18 no.21: Suppl.: 87-89
15 N ' 65.

On certain infectious diseases in Kielce and in the
county of Kielce i XIX century. Ibid.: Suppl.: 91-95
' 65.

28(1)
AUTHOR:

POL/46-4-1-8/15

Bayer, Ryzard, Chmielewski, Jerzy and Koba, Teresa

TITLE:

A 14 Channel Pulse Amplitude Analyzer with Counting
Attachment (14-kanalowy analizator amplitudy z przyst-
awka liczaca)

PERIODICAL: Nukleonika, 1959, Vol 4, Nr 1, pp 87-91 (Poland)

ABSTRACT:

A description of the equipment with a block-diagram (Fig. 1) of the analyzer and the counting attachment is given. Furthermore the equipment is illustrated with and without the case. The range of application is outlined in brief. Analyzer - 14 channels; width of channel gate - 2,5,10 V; impulse amplitude - 16-171 V; width of impulse - 1-5 micr.; separation time - 2.5-5 micro-sec.; stability of discriminator - \pm 50 mV; working conditions - 220 V, 900 VA; size - 570 x 360 x 2300 mm. Specification of counting attachment: scaling factor total count storage 999999; resolving time - numerator about 0.1 sec; size - 560 x 340 x 840 mm. There are 1 layout and 2 photographs.

Card 1/2

KOBA, V.G., Cand Tech Sci -- (diss) "Concerning the problem of the study of ~~shelling~~ devices for the ~~extracting~~ ^{shelling} of seeds from the fruit of the watermelon." Saratov, 1958, 20 pp with sketches
(Min of Agr USSR. Saratov Agr Inst) 150 copies
(KL, 50-58, 125)

- 68 -

UL'YANOV, Aleksey Fedorovich, doktor tekhn. nauk; KOBЯ, Viktor Grigor'yevich, kand. tekhn. nauk; LOGVINOV, M., red.; BYKOVA, M., red.; LUKASHEVICH, V., tekhn. red.

[Overall mechanization of livestock farms] Kompleksnaya mekhanizatsiya v zhivotnovodstve. Saratov, Saratovskoe knishnoe izd-vo, 1961. 261 p.
(Farm mechanization)

PARSHIN, Yu.A.; KOBA, V.I.; SAVENKO, A.L.

Remote safety device for placing the neutron source in the logging
tool of the STP-MG-57 apparatus. Sbor.luch.rats.predl. pt. 2:
51-53 '63.
(MIRA 17:5)

1. Glavnaya upravleniya geologii i okhrany nedr pri Sovete
Ministrov BSSR.

SOURCE: AN SSSR. Doklady, v. 154, no. 4, 1964, 894-896, and top half of insert
of the page 894

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ACCESSION NR: AP4012975

hours at 200--800°C. It was found that polyvinyl alcohol undergoes a change in molecular structure at 300°C. The maximum concentration of aliphatic conjugated double bonds, minimum crystallinity, and maximum electric conductivity appear at 200°C and inert gas at 300°C. Pyrolysis at higher temperatures increases the polymer's density and lowers activation energy. This is due to the "carbon structures" becoming more stable. The heat-treated ammonia increases in their number and size due to an increase in the number of double bonds. The maximum resistivity and activation energy of the pyrolysis products is apparently associated with the complete breakdown of the polyvinyl alcohol and disappearance of hydrogen bonding before any crosslinks are formed. (See Fig. 1, Figures and Table)

ASSOCIATION: Vsesoyuznyy nauchno-issledovatel'skiy institut senokristallov,
sinteticheskikh materialov i tsinko-cristallicheskikh veshchestv (All-
Union Research Institute of Single Crystals, Scientillation Materials,
and Zinc-Crystal Chemical Substances)

SUBMITTED: 26Sep63

FILE: 00

SUB CODES: OC, GC

NO RPT COV: 005

OTHER: 005

CC ✓2

CRYNBERG, M.; KOBA, Z.

Five pien isospin wave functions. Bul Ac Pol mat 11 no.
11:701-706 '63.

1. Institute of Theoretical Physics, University, Warsaw
and University Institute for Theoretical Physics,
Copenhagen.

KOBA, Z.

On the angular momentum weight factor in the statistical theory
of multiple particle production. Pt. 1. Bul Ac Pol mat 9 no.3:
211-216 '61.

1. Institute ofr Nuclear Research, Polish Academy of Sciences,
Warsaw. Presented by L. Infeld.

KOBA, Ziro

On the angular momentum weight factor in the statistical theory of multiple particle production. Pt. 2. Bul Ac Pol mat 9 no.5:395-401 '61.

1. Institute of Nuclear Research, Polish Academy of Sciences, Warsaw. Presented by L. Infeld.

KCBM, Ziro

Statistical theory of multiple particle production with angular momentum conservation. Acta physica Pol 20 no.3:213-234 '61.

1. Institute of Nuclear Research, Polish Academy of Sciences, Warsaw,

33784

P/045/62/021/002/005/007
B137/B102

24.6700

AUTHORS:

Koba, Ziro, and Krzywicki, Andrzej

TITLE:

Remarks on the "effective target mass"

PERIODICAL: Acta Physica Polonica, v. 21, no. 2, 1962, 153 - 174

TEXT: The authors investigate the "effective target mass" as defined by N. G. Birger and Yu. A. Smorodin (Zh. eksper. teor. fiz., 37, 1355 (1959)) as to whether or not this experimentally measurable quantity can give certain information on the collision mechanism and the high (some Gev) and superhigh ($\sim 10^2$ Gev) energy ranges. If an incident particle (nucleon or pion) is assumed to collide, not with the whole target particle (nucleon), but only with a small part of it (e.g., a virtual pion in the cloud) with an effective mass m^* , this quantity m^* can be written as

$$m^* = \sum_i' (p_{oi}^{(1)} - p_i^{(1)}) \cos \theta_i^{(1)},$$

where (1) indicates a quantity in the laboratory system, and \sum' denotes summation not including the recoil target nucleon. The invariant quantity $\kappa^2 = \Delta^2 - \vec{\Delta}^2 - \Delta_0^2$ plays an

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Card 1/3

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Remarks on the "effective target ...

essential role in the field-theoretical treatment. $\vec{\Delta}$ and Δ_0 denote respectively the energy and momentum transfer between two groups of particles. Since κ^2 is not easy to determine experimentally, the authors derive the following relation between κ and m^* : $\kappa = m^*/\gamma_s - \sqrt{\gamma^2 - 1}$, where γ_s is the Lorentz factor connecting the so-called S system with the laboratory system. The S-system or minimum-momentum system is characterized by $\Delta_0^{(s)} = 0$, i.e., the energy transfer between two groups of particles vanishes. A method for determining κ from measured values of m^* is given. The effective target mass is examined first within the framework of general kinematic relations which are independent of any interaction mechanism, then from the point of view of the one-pion exchange theory. The ratio of the effective target mass to the whole mass of the target particle is related to partial inelasticity in a system moving in the direction of incidence. A method for determining the mirror inelasticity from the measured recoil momentum is given. A quantum-field theoretical investigation of the target mass on the basis of the one-pion exchange model without and with pole approximation (where the "cross

KOBA, Ziro

Three pion wave functions; method of "effective angular momentum." Acta physica Pol 22 Suppl. 103-125 '62.

1. Institute for Nuclear Research, Warsaw.

S/058/63/000/002/015/070
A059/A101

AUTHOR: Koba, Ziro

TITLE: Three pion wave functions. Method of "effective angular momentum"

PERIODICAL: Referativnyy zhurnal, Fizika, no. 2, 1963, 17, abstract 2B112
("Rept. Inst. badah jadrow. PAN", 1962, no. 320/VII, 30 pp, English; summaries in Polish and Russian)

TEXT: The system of three pions A, B, and C is examined from the purely kinematic point of view. A method of constraining wave functions in configuration space is suggested, having a given total momentum, total orbital momentum, and parity in the C-system, and prescribed symmetry properties. An assembly of orthonormalized functions is introduced:

$$\begin{aligned} \Xi_{lm,LM,P,\nu}(\vec{r}, \vec{\tau}) = & (p^{1/2}/R^2) Y_l^m(\omega_b) \times \\ & \times Y_L^M(\omega_t) (\sin \theta)^l (\cos \theta)^L P_\nu^{(1L)}(\theta) J_{1+L+2\nu+2}^{(PR)} \end{aligned}$$

where $s = (1/\sqrt{6})(\vec{x}_A + \vec{x}_B - 2\vec{x}_C)$, $\vec{\tau} = (1/\sqrt{2})(\vec{x}_A - \vec{x}_B)$, ω_b and ω_t are the solid angles
Card 1/2

Three pion wave functions. Method of...

S/058/63/000/002/015/070
A059/A101

of vectors s and t , respectively, $\theta = \arctg t/s$; $R^2 = s^2 + t^2$, and $p^2 = u^2 + v^2$, where \vec{u} and \vec{v} are momenta canonically conjugated with s and t ; $F_{\lambda}^{(LL)}$ are normalized Jacobi polynomials. The new quantum number $v = 0, 1, \dots$ characterizes the distribution of the "total relative momentum" P between the parts u and v ; the less v , the more symmetrical the splitting. The value $\Lambda = 1 + L + 2v$ is denoted as the effective orbital momentum. The states Ξ with a fixed Λ form a subspace invariant to the group S_3 of permutations of particles A, B, C between each other. From the wave functions Ξ , further wave functions with given total momentum, its projection, and Λ are construed, which also form a subspace invariant to transformations of the group S_3 . A table of these functions is presented which correspond to a given irreducible representation of S_3 (with $\Lambda \leq 4$), as well as a table which gives the number of configuration functions with $\Lambda = 5$ and 6, and a table of isospin functions of three pions. The method can be generalized to a system of four and more pions.

M. Braun

[Abstracter's note: Complete translation]

Card 2/2

GRYNBERG, M.; KOBA, Z.

Four-pion wave functions. Acta physica Pol 23 no.4:501-526 Ap '63.

1. Institute for Nuclear Research, Warsaw.

KOBAIDZE, Asen Alekseyevich

[People of Zemo-Kedi on the new road] [Zemokedtay na novom
puti. Tbilisi, Gos.izd-vo "Sabchota Sakartvelo"] 1963.
65 p.
(MIRA 17:5)

KOBAK, Kira Ivanovna

Some problems concerning the carbon dioxide supply of forest
biogeocenoses. Problem. skol. i fiziol. les. rast. no.2:61-98
'64.
(MIRA 18:11)

1. Leningradskaya ordena lenina lesotekhnicheskaya akademiya
imeni S.M. Kirova.

KOBAK, K.I.

Carbon dioxide concentration in the ground layer of air in
forest biogeocenoses. Trudy Inst. biol. UPAN SSSR no. 43:
199-201 '65 (MIRA 19:1)

1. Leningradskaya lesotekhnicheskaya akademiya imeni
S.M. Kirova.

KOBAK, M.; ANDRIYANOV, P.

Speeding up mechanization of water supply on livestock farms of
collective and state farms. Sil'. bud. 10 no.1;3-4 Ja '60.
(Ukraine--Water supply, Rural) (MIRA 13:5)

AUTHOR: Kobak, V.O. SOV/106-59-7-6/16
TITLE: Design of "Two-sided" Diode Limiters
PERIODICAL: Elektrosvyaz', 1959, Nr 7, pp 40 - 44 (USSR)
ABSTRACT: Although two-sided diode amplitude limiters, i.e. limiters which clip the top and bottom of signals, find wide application, no detailed analysis has been made from which engineering formulae may be obtained. The author therefore considers four two-sided diode limiter circuits and produces design formulae for them. In the first two circuits, which the author calls "Type A" circuits, the first diode is the lower limiter and the second diode is the upper limiter (Figure 1a). In the second two circuits Type B, the diode connections are changed round; the first diode is the upper limiter and the second the lower limiter. In the analysis, it is assumed that the internal resistance of the diodes in the conducting direction is constant and equal to R_i ; in the reverse direction, the resistance is assumed infinite. The static limit thresholds are determined.
~~Carries~~

Design of "Two-sided" Diode Limiters

SOV/106-59-7-6/16

In a dynamic regime, the results obtained are distorted somewhat, due to inter-electrode capacity. (This problem was investigated in the work of N.Ye. Zhabotinskiy and Yu. L. Sverdlov - Ref 1)

A Type A circuit (which limits positive polarity signals) and its characteristic is shown in Figure 1. For this circuit, the following conditions must hold:

$$E_0 > U_{Bx2} > U_{Bx1} > 0 \quad (1)$$

$$R_1 > R_2 \quad (2)$$

When $U_{Bx} < U_{Bx1}$ (diode J_1 closed) and assuming that:

$$R_1 \ll R, R_1, R_2 \quad (3)$$

then the following relationships are obtained:

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Design of "Two-sided" Diode Limiters

SOV/106-59-7-6/16

$$U_{Bx1} \approx U_{Bblx1} \approx \frac{E_o(a + b)}{a + b + 2ab} \quad (4)$$

where

$$a = R_1/R, \quad b = R_2/R.$$

When $U_{Bx} > U_{Bx2}$ (diode $S1_2$ closed), then:

$$U_{Bx2} = U_{Bblx2} \left(c + \frac{c}{a} + 1 \right) = E_o \frac{c}{a} \quad (5)$$

Card 57

$$U_{Bblx2} = \frac{E_o}{1 + b} \quad (6)$$

Design of "Two-sided" Diode Limiters

SOV/106-59-7-6/16

where:

$$c = \frac{R_{Bx} + R_i}{R}$$

The symbols are as indicated in Figure 1. For design purposes, these relationships are re-arranged into the forms of Eqs (7) and (8). The value of c determines the transfer coefficient of the limiter;

$$k = \frac{U_{Bblx2} - U_{Bblxl}}{U_{Bbx2} - U_{Bxl}} \quad (10)$$

which can be written as:

$$k = \frac{1}{c\left(\frac{1}{a} + \frac{1}{b} + 2\right) + 1} \quad (11)$$

Carroll

Design of "Two-sided" Diode Limiters SOV/106-59-7-6/16

The procedure for applying these formulae to the computation of the element values is then given. These design formulae can be applied to the reverse diode connection circuit (Figure 3a). Only formula (1) is altered to the form:

$$E_o < U_{Bx2} < U_{Bx1} < 0 .$$

The Type B circuit differs from the Type A in that the first diode limits at the upper level and the second at the lower level. Such a circuit is obtained from the circuit of Figure 3a by changing the negative voltage - E_o to a positive value + E_o . This gives greater flexibility since a positive signal can be limited at the upper level and a negative signal at the lower level, depending on the relationship of the elements. Possible characteristics are shown in Figure 4 (I and II). When $U_{Bx} < U_{Bx1}$, diode D_1 is open and D_2 closed. When $U_{Bx} > U_{Bx2}$,

Card 5/7

Design of "Two-sided" Diode Limiters

SOV/106-59-7-6/16

the converse is true. For normal operation, the following conditions must be fulfilled:

$$E_o > U_{Bx2} > U_{Bx1}$$

$$E_o > U_{Bx2} > 0, \quad U_{Bx1} \geq 0 \quad (12)$$

$$R_2 > R_1$$

(13) .

The design formulas deduced for this circuit are similar to those for the circuit Type A (Eqs 4-8), except that U_{Bx1} and U_{Bx2} are interchanged and also U_{Bblx1} and U_{Bblx2} are mutually interchanged.

The results of experimental measurements are given in Table 1.

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8/106/61/000/007/001/004
A055/A127

AUTHORS: Andreyev, Yu. A., Kobak, V. O.

TITLE: Properties of the double-T bridge, taking into account the effect of the generator and load parameters

PERIODICAL: Elektrosvyaz', no. 7, 1961, 3 - 11

TEXT: All previous publications dealing with the properties of the double-T bridge, and taking into account the generator impedance and the load, are limited to particular cases. The authors of the present article examine the most general case. After a brief recapitulation of the main formulae of the double-T bridge when the generator impedance and the load are not taken into account, the authors present a general analysis of the loaded bridge. The formulae giving the zero-balance condition and the tuning frequency ω_0 are the same, here, as in the case of the nonloaded bridge. To determine transmission factor T, the author gives the following formula ($\delta = \omega/\omega_0$ being the relative detuning, and $Y = \delta - 1/\delta$ the generalized relative detuning):

$$\frac{1}{T} = \frac{U_{\text{inp}}}{U_{\text{outp}}} = (1 - \frac{D_1}{Y}) + \frac{Z_{\text{gen}}}{Z_T} [(D_1 + D_2) - 1 - \frac{D_1 D_2}{Y}] - 1 \frac{Z_T}{Z_1} \frac{1}{Y} + \frac{Z_{\text{gen}}}{Z_1} (1 - \frac{D_2}{Y}) \quad (5)$$

Card 1/6

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28514 S/106/61/000/007/001/004
A055/A127

Properties of the double-T bridge...

where:

$$Z_T = R_1 \left(\frac{1+\beta}{\sqrt{\alpha\beta n}} - i \frac{1}{2} \frac{(1+\alpha)}{\alpha} \right)$$

$$D_1 = \frac{\alpha(1+\beta) + \beta n(1+\alpha)}{\sqrt{\alpha\beta n}}$$

$$D_2 = \frac{(1+\beta) + n(1+\alpha)}{\sqrt{\alpha\beta n}}$$

n being any positive number ($0 < n < \infty$), $\alpha = R_1/R_2$ and $\beta = C_2/C_1$. The balance conditions of the bridge characteristics are determined, in the general case, by the relations

$$\begin{aligned} \operatorname{Re} T(\delta) &= \operatorname{Re} T\left(\frac{1}{\delta}\right) \\ \operatorname{Im} T(\delta) &= -\operatorname{Im} T\left(\frac{1}{\delta}\right) \end{aligned} \quad (6)$$

The analysis of the possible ways of connecting the double-T bridges reveals that, from the point of view of their use in selective tube (or transistorized) amplifiers, the most interesting connection is that shown in Fig. 4. In this case, C_{gen} represents the transfer capacitance from the anode of a tube, R_{gen} is determined by the anode load and the internal tube resistance, R_1 is the input resistance of

Card 2/7

Properties of the double-T bridge...

A055/A127

a tube, and C_1 serves only to balance the bridge characteristics. The authors analyze the conditions (relating the parameters of the generator, of the load and of the bridge) to be satisfied for the symmetry of the amplitude-phase characteristics of the circuit of Fig. 4. There are five variants of the conditions.

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$$R_1 C_1 = n R_{gen} C_{gen}; \quad R_1 C_1 = R_1 C_1; \quad R_1 C_1 = R_2 C_2; \quad R_1 R_2 = (1+n) R_{gen} R_1 \quad (8d)$$

The transmission factor is given by the following expression, whichever of the five sets of conditions is satisfied,

$$T = \frac{T_m}{1 - i \frac{d_1}{Y} + i \frac{y}{d_2}} \quad (9)$$

In the case of conditions (8d),

Card 3/7

28514 S/106/61/000/007/001/004
A055/A127

Properties of the double-T bridge...

$$\left. \begin{aligned} T_m &= \frac{\alpha^2}{(\alpha+\delta)(\alpha+\delta+2\alpha\delta)} \\ d_1 &= \frac{(1+n)(1+\alpha)(\alpha+\delta)^2}{\sqrt{n\alpha^2}} T_m \\ d_2 &= \frac{(1+n)\alpha}{\delta^2 \sqrt{nT_m}} \end{aligned} \right\} \quad (10)$$

where $\delta = \frac{R_1}{R_2}$, $\alpha = \frac{R_1}{R_2}$. The frequency characteristic of the bridge, in the general case examined by the author, is

$$|T| = \frac{T_m}{\sqrt{1 + \left(\frac{d_1}{Y} - \frac{Y}{d_2} \right)^2}} \quad (11)$$

The phase characteristics are calculated according to formula:

$$\varphi = \text{arc} \operatorname{tg} \left(\frac{d_1}{Y} - \frac{Y}{d_2} \right).$$

Using (9), it is easy to plot the amplitude-phase characteristic of the bridge in the complex plane. This characteristic consists of two superposed circumferences. The Q-factor of an RC selective system is determined, in the general case, as the

Card 4/7

28514 S/106/61/000/007/001/004
A055/A127

Properties of the double-T bridge...

steepness of the frequency characteristic at the tuning frequency. As applied to the case of formula (9), the Q-factor is:

$$Q = \frac{d|T|}{dY} \Big|_{Y=0} = \frac{1}{d_1}. \quad (12)$$

After examining several particular cases (for instance, the case of a symmetrical bridge system $R_1 = R_2 = R$, $C_1 = C_2 = C$), the authors draw the following conclusions as to the properties of the double-T bridge, considering the effect of generator and load parameters. 1) The double-T bridge (in real systems) possesses asymmetrical amplitude-phase characteristics only when a definite relationship exists between the parameters of the generator, of the load and of the bridge. 2) Symmetrical characteristics of the bridge are obtained only if the load and the generator internal impedance are both either purely resistive or purely capacitive, or when they are both resistive-capacitive. Any mixed case leads to unavoidable asymmetry. 3) The selectivity of a selective amplifier with a double-T bridge is much worse, at a great detuning, than it was generally supposed. There are 7 figures and 7 references: 4 Soviet-bloc and 3 non-Soviet-bloc. The references to English-language publications read as follows: Cowles, The parallel - T resistance-capacitance network. Proc.IRE, 1952, no. 12; Buckley, Parallel-T network. "Wireless Engineer".

Card 5/7

APPROVED FOR RELEASE: 09/18/2001

CIA-RDP86-00513R000723410003-

28514 S/106/61/000/007/001/004
A055/A127

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Proc.IRE, 1955, no. 5.

SUBMITTED: December 12, 1960

[Abstracter's note: The following subscripts are translated in the text and formulas: 1 (load) stands for H; gen (generator) stands for L or L.]

XX

Card 6/7

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("IFP", Vol. 10, No. 7, July 1954, Krakow, Poland)

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2'504 O redkikh formakh pshenits gruzii. Soobshch akad. nauk gruz. SSP, 1949, №. 4,
c. 237-44, c. 237-44 - Bibliogr: 7 naazv.

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ANDREYEV, Yu.A.; KOBAK, V.O.

Features of a double T-shaped bridge with consideration to the
effects of the parameters of the generator and load. Elektrosvias'
15 no.713-11 Jl '61. (MIRA 14:6)
(Bridge circuits) (Electric networks)

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9,3240(1040, 1139, 1154)
AUTHOR: Kobak, V.O.

TITLE: Possibilities offered by amplifiers with negative feedback through a double T-bridge

PERIODICAL: 'Elektrosvyaz', no. 2, 1962, 10 - 16

TEXT: This article is a comparative estimate of the possibilities offered by various selective amplifier systems with negative feedback through a double T-bridge. The effect of the generator and load parameters on the properties of the system are not taken into account. The amplifier is frequency-independent without feedback. The input impedance $|K_0| = -K_0$ is introduced. The following assumptions are made: 1) The input impedance of the amplifier Z_{inp} is great, and its output impedance Z_{outp} is small. 2) The passive "three-pole" input and its output impedances (Z_{in} and Z_{out} , respectively) satisfy the inequalities: $|Z_{outp}| \ll |Z_T|$, $|Z_T| \ll |Z_{inp}|$. Under all these assumptions

Card 1/3

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A055/A101

Possibilities offered by amplifiers with ...

the author examines five possible ways of inserting E into the amplifier circuit (Fig. 1) and determines the overall amplification factor for different combinations of E and of the output voltage U . i.e., he determines:

$$K_1 = U_n/E_m \text{ at } \begin{cases} m = 1, 2, 3, 4 \\ n = 1, 2, 3, 4 \end{cases}$$

Eight formulas (giving K_1, K_2, \dots, K_8 for each of these eight combinations, respectively) are thus obtained. The author passes next to the case when a double T-bridge is used as the "three-pole" in the feedback circuit. He deduces six formulas giving, in this case, the scalar amplification factor for the first six combinations, i.e., $|K_1|$ to $|K_6|$, and discusses these formulas. He also calculates the scalar amplification factor $|K_9|$ for a special case, when E is inserted into the "middle" of the amplifier, as shown in Figure 5. At the end of the article, the author reproduces the diagrams of four of the most interesting practical realizations of one-stage selective amplifiers with a double T-bridge in the feedback circuit, and briefly discusses these diagrams. There are 6 figures, and 9 references: 7 Soviet-bloc and 2 non-Soviet-bloc. The English-language reference reads as follows: Ward, Landshoff, Parallel - T RC selective amplifiers. Electronic and Radio Engineer, v. 33, no. 4, 1958. The Soviet authors and scientists mentioned in the article are: L.S. Gutkin, Yu.O. Kochinev, R.Ya. Berkman, Yu.I.

Card 2/3

ANDREYEV, Yury Aleksandrovich; KOBAK, Valeriy Oskarovich;
MICHURIN, V.I., kand. tekhn. nauk, retsenzent; APTEKMAN,
M.A., red.; TSAL, R.K., tekhn. red.

[Double T-shaped bridges in selective amplifiers] Dvoynye
T-obraznye mosty v izbiratel'nykh usilitel'akh. Leningrad,
Sudpromgiz, 1962. 103 p. (MIRA 15:9)
(Amplifiers, Electron-tube) (Bridge circuits)

Doppler effect (Microwave Journal, 1960, no. 11), by C. G. Bachman et al. (Microwave Journal,

Card 1/2 APPROVED FOR RELEASE: 09/18/2001 JDC:SA:RDP86-00513R000723410003-

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1963, nos. 2-3), and by other researchers. The model performs a reciprocating (sinusoidal-law) motion along the signal-transmission line. The required tuning

frequency can be determined from this formula: $T = \frac{4\pi S_0}{F_{0n} \lambda \sqrt{2}}$; the required pass-

band of the receiving channel is: $\Delta F_{0,1} > 2 \left| \sqrt{\frac{\pi F_0}{T}} - F_0 \right| \sqrt{\frac{1.411}{S_0}}$. Here: T -

reciprocating-motion period; S_0 - motion amplitude; F_{0n} - amplifier resonance frequency; $Q_0 = F_0 / \Delta F_{0,1}$ - equivalent Q-factor of the frequency-selective amplifier; λ - wavelength. A numerical example illustrates the use of the above approximate formulas. Orig. art. has: 2 figures and 10 formulas.

SUB CODE: 09 / SUBM DATE: none / ORIG REF: 005 / OTH REF: 003

Cord 2/2